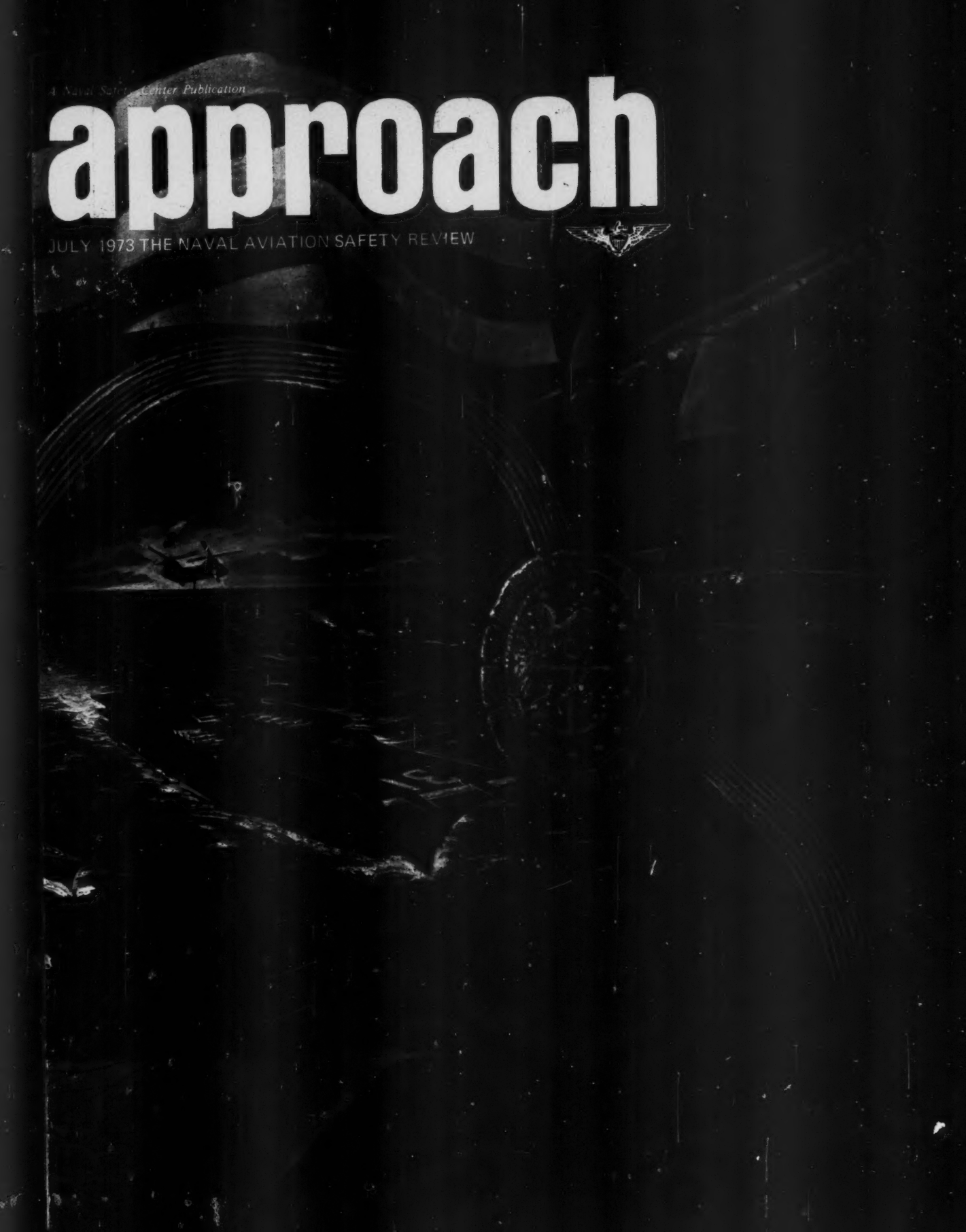
A Naval Safety Center Publication

approach

JULY 1973 THE NAVAL AVIATION SAFETY REVIEW



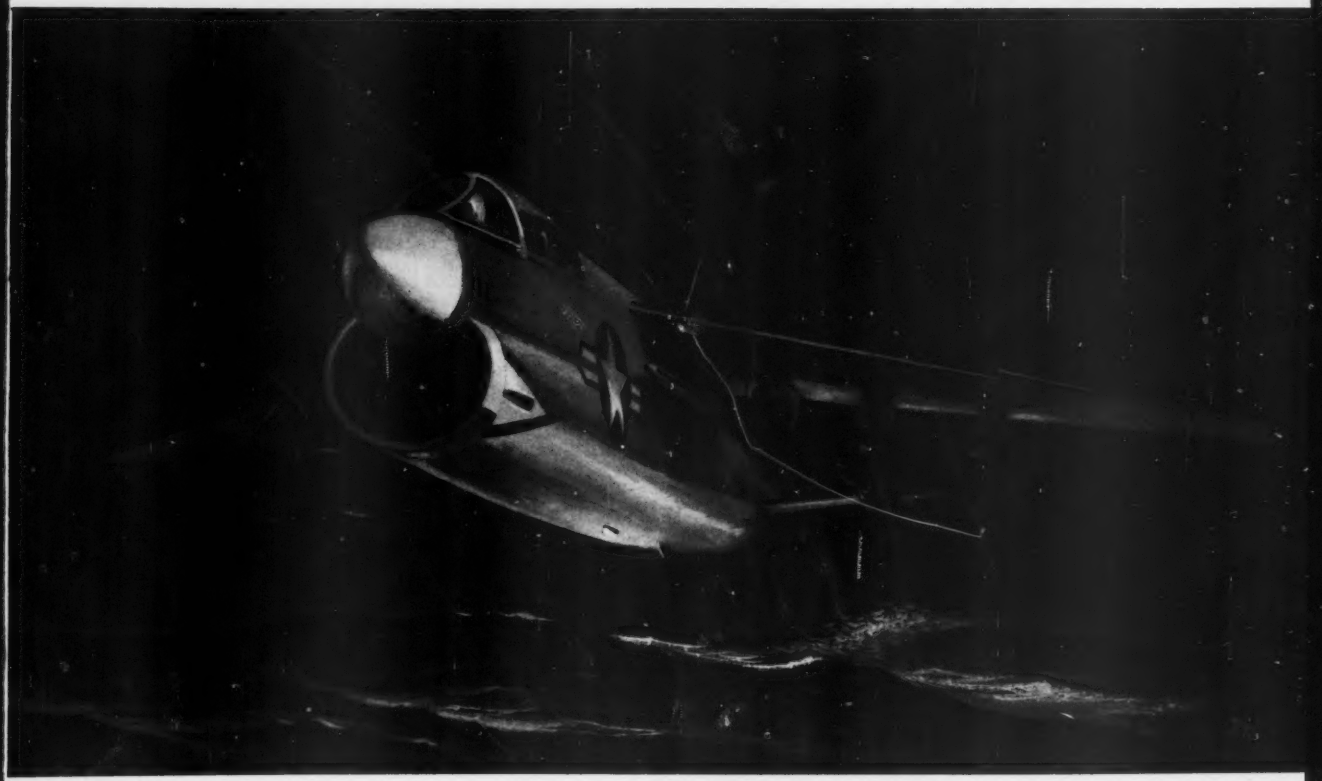
V-2

Such statements continue to be recorded all too often and most frequently involve single-piloted attack aircraft, specifically the A-7 and A-4. In April 1973, another naval aviator, flying an A-7, was lost shortly after a night catapult launch.

No doubt, as in most of those accidents preceding, the mishap board will assign a cause of undetermined . . .

Pilot Distracted:

FLEW INTO WATER



Night post launch accidents are a problem of long standing. NAVSAFECEN Flight Safety Advisory 1-70, although more than 2½ years old, provides background on the problem and cautions which are still valid. It is reprinted here with minor updating.

NAVSAFECEN Flight Safety Advisory 1-70

In the past 10 months, there have been four A-7 aircraft and four pilots lost at sea following night catapult launches; all from undetermined causes ("Pilot distraction/disorientation – flew into the water"). This compares with one similar loss in the same period for all other types. The present rate of better than one per quarter is an alarming trend and indicates that this old, predominantly A-4 associated hazard is shifting to the A-7.

A continuing analysis of these accidents is beginning to reveal a remarkable profile similarity. Unfortunately, the lack of continuous external observations by qualified personnel and lack of indepth recording of many seemingly insignificant details by the individual accident boards have left vital, common gaps in the reconstruction effort.

Three of these accidents involved mission departures,

while the fourth (and most recent) occurred during initial carquals. In all cases, the catapult launch and initial climb appeared normal. Subsequently, the aircraft would reach an altitude/position where it was no longer considered of prime concern, and visual tracking would be discontinued. Shortly thereafter, the aircraft lights would be observed indicating a gradual, wings level descent into the water ahead of the ship. There were two probable late ejections.

Other common and uncommon circumstances are as follows:

- Two A-7A, two A-7B, *zero* A-7E. (The latest accounting, as of 23 May 1973, shows the loss of three A-7As, two A-7Bs and one A-7E.)
- No visible horizon, but ceiling and visibility reasonably above minimum VMC.
- Engine/generator running as evidenced by lights.
- No obvious control problems.
- No emergency transmissions from pilots. Two called airborne; two did not. The two that called did not respond to later transmissions just prior to impact.
- Aircraft maintenance histories revealed no significant material conditions.
- Two aircraft had external ordnance loads, and there was no evidence of jettisoning.
- Visual contact by qualified observers was lost with two mission aircraft when they drifted 5 degrees right.
- One pilot apparently had rotating beacons on.
- One pilot was well-experienced; two had in the vicinity of 500 hours and 70 carrier landings; the fourth was a first tour RAG student. The two "medium experience" pilots had stated concern for vertigo tendencies. Pilots were all reasonably night current.

The findings of the three completed accident boards have been "pilot distracted – flew into water," based on the assumption that the pilots were unaware of the impending crash. Otherwise, an emergency transmission, early ejection, erratic flight path, or jettisoning of stores would be expected. There appears to be little doubt that the pilots did fly (or stall) into the water; however, the quality of the pilots, existing weather, and many other factors lead to the suspicion that the distraction was of an insidious nature not previously experienced or expected in the night catapult/departure environment. This insidious distraction would interrupt procedures/scan or introduce a confusion factor long enough to set up a rate of descent, but not be of sufficient concern to convince the pilot that he could not extricate himself and the aircraft from the situation in the altitude remaining. A situation where a pilot was inadvertently placed on the back side of the power curve could produce the flight profile and pilot reactions common to all these accidents.

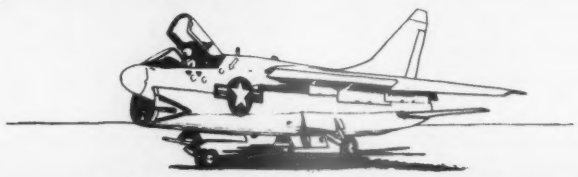
Perhaps of more significance is the record of the F-8 aircraft in this phase of flight. The F-8 has experienced only two similar accidents in its lifetime – one on carquals and one on mission departure. Since 1965, the F-8 record is unblemished. Inputs from the VF community indicate that their "go for the moon" departure procedures/philosophy as compared to a lower altitude/rendezvous concept by attack aircraft may be as much of a safety factor as excess thrust available.

To reverse this trend in the A-7A/B and prevent its spread to the A-7E, Commander, Naval Safety Center, recommends reemphasis, implementation, or reevaluation in the following areas:

- Qualified observers visually monitor all A-7 night catapult launches.
- Reexamine cockpit evolutions after the catapult launch to further standardize procedures, establish the most conservative approach, and insist on rigid pilot adherence.
- Require day catapult procedures to be identical to night procedures. (Has now been incorporated in NATOPS.)
- Review "in-practice" F-8 departure/rendezvous procedures vis-a-vis A-7.

Emphasis

COMNAVAIRPAC recently issued a message emphasizing the need for attention to this problem. It stated in part: "One of the actions recommended in NAVSAFECEN Flight Safety Advisory 1-70 over 2-1/2 years ago bears repetition: action addees should again reexamine those cockpit evolutions after the catapult launch to standardize procedures, establish the most conservative approach, and insist on rigid pilot adherence."



The article "Night Post-Launch Accidents" in the February 1971 APPROACH discussed this subject in some detail.

Propwash and Jet Blast

A C-2A turning up for catapult launch caused substantial damage to a C-1A which had been spotted abaft the C-2A with wings folded and engines turning. The C-2A propwash severely buffeted the mini-COD causing failure of the starboard wingfold bell-crank support fitting and center wing section actuator cylinder. This, in turn, allowed the C-1A starboard wing to come to rest on top of the fuselage.

NAVSAFECEN records indicate that during the past 3 years, 125 embarked aircraft mishaps have resulted from propwash/jet blasts. Analysis of mishap narratives indicates the most common circumstances involved airframe damage to aircraft with wings folded behind the JBD with another aircraft on the catapult for launch. Also, during the same 3-year period, there were 62 flight deck mishaps involving death/injury where propwash/jet blasts were causal factors.

Jet blast and propwash, especially from the C-2/E-2, are significant flight deck hazards that must be reckoned with during launch cycle. These hazards can become critical, particularly on smaller decks (with smaller JBDs) which do not regularly handle the E-2 or super-CODS. The desire to catapult the super-COD early in the launch cycle, especially on the smaller carriers, is appreciated. Prior to launching the C-2 from the 27C class or other carriers with small JBDs, however, meticulous care must be taken to sanitize the area immediately abaft the JBD. Chocks, tiedowns, and locking pins must be in place. Aircraft in the prop blast area must have wings spread and locked.

Recognizing that each carrier deck is unique with regard to size/mix of aircraft, hardware, and people, there are still some general thoughts which are valid for all:

- Compliance with CVA/CVS NATOPS, which cautions against spotting, towing, or taxiing aircraft immediately behind the JBD when another aircraft is at high power setting on the catapult, is mandatory. It logically follows that unless wing lock/jury struts, chocks, and tiedowns are in place, no aircraft should be parked immediately behind JBDs when another aircraft will be at high power settings on the catapult.
- Recommend that all tower personnel be designated and trained as flight deck safety observers. These observers have a panoramic "big picture" view of the deck and have ready access to rapid communication with flight deck supervisors and directors. Experienced, motivated individuals could thus detect and help the air department team eliminate potential blast/crunch problems before they occur.
- Recommend continued emphasis on pilot/director/topside training to ensure use of minimum power, proper spotting techniques, and careful securing of topside equipment.

It Got Away. A CH-46 was being towed along an air station road between 10-15 mph when it crossed a shallow rut.

The jolt bounced the retaining pin out of the towbar, and the helo began to overtake the tractor. The driver heard the pin hit the deck and began blowing his horn to clear the way ahead. The wingwalkers and a man stationed on the aft pylon (to clear wires) jumped off.

The wingwalkers tried to stop the runaway helo by throwing chocks on both sides. It didn't help. The helo rolled ahead, veered right, and ran up a 4-foot embankment. Rolling back down, it sheared off a small tree and came to a halt embedded on a stump.

The aircraft was being towed because it had *no brakes. All the more reason why a locking key should have been used in the towbar retaining pin.*

The Nut Behind The Stick. A T-34 pilot on final approach to a civilian airfield discovered his elevator control was frozen. As the ground rapidly approached, he grabbed the stick with both hands and yanked hard. This freed the controls, and he made a normal landing. He later reported that he could have executed a waveoff and made a normal landing using trim.

The cause of the bind was an extra, self-locking nut found in the elevator control area. The nut had numerous scrapes and abrasions on it.

The command reported that the aircraft had recently completed a calendar inspection. The extra nut (FOD) was obviously overlooked during CDI and QAR inspections.

You Freeze-a-me Babee. An A-6 was parked outdoors with wings folded for 5 days in below-freezing temperatures. The first 3 days, the aircraft was exposed to snow, sleet, and freezing rain.

During a ground turnup on the fifth day, the pilot unfolded the wings and cycled the flaps and slats. Accumulated ice in the slat track and screwjack-can assemblies played havoc with associated systems.

Damage to the screwjack actuator resulted when the slats retracted. The screwjack jammed against ice that had formed in the screwjack-can assembly, causing it to snap off inside the actuator. One piece fell aft into the can assembly, and the other piece was trapped between the slat and the wing. As the slats retracted, the slat track moved aft, forcing a block of ice against the back of the can assembly. The assembly failed at the weld, and the back of the can was forced into the wing fuel cell. A fuel leak resulted.

The command reported that in the future every effort will be made to ensure aircraft are hangared or parked with wings spread whenever freezing precipitation is expected. If this is not possible, the aircraft will be brought inside the hangar and given sufficient time to thaw before the wings or flight controls are exercised.

Lost Canopy. Completing an uneventful day, close air support mission, an A-4E pilot returned to his ship and made a normal arrested landing. As the *Skyhawk* was clearing the arresting gear, the canopy was unintentionally jettisoned.

The force of the arrestment had caused a 35mm camera sitting on the starboard console to slide forward and wedge between the seat and the right side of the cockpit. As the pilot raised the hook to clear the arresting gear, the hook handle struck the camera causing it to rotate aft and engage the canopy jettison handle with sufficient force to jettison the canopy. The pilot was attempting to expedite clearing the gear to

limit the fouled-deck time.

The detachment OIC commented:

"This incident is a graphic illustration of how loose gear in the cockpit, combined with hurried pilot procedures, can cause needless damage to an aircraft. The camera was issued and required for the mission, but the pilot didn't have the camera properly secured for arrestment.

"Once arrested and with the camera adrift, the pilot allowed his concentration on clearing the gear quickly to take precedence over any attempt to move the camera from its compromising position. Thus, the combination of these two factors resulted in the loss of a canopy.

"This detachment is investigating a method of securing gear within the cockpit which will fulfill both safety and mission requirements.

"Although carrier deck operations move at a brisk pace, priority must be placed on properly executing procedures, rather than hurrying, so that incidents such as this do not occur."

Rough Ride. The pilot of an F-4, really an older head, was shooting an instrument approach to runway 24 in IFR conditions. The airport was reporting partially obscured, 600 feet broken, 8000 feet overcast, 3/4-mile visibility in light rain and fog. Winds were 160 degrees at 15 knots. RVR was not reported.

He was advised to take the upwind gear on the duty. His approach was satisfactory until the last half mile when GCA gave two lineup corrections just prior to minimums. He gained visual contact with the high-intensity approach lights to his right and made a right turn to correct lineup.

The *Phantom's* rain removal equipment was operating, but forward visibility was poor – he estimated no more than ½-mile at minimums. Tower controllers three-fourths of a mile away could not see the aircraft.

In correcting his lineup, he misinterpreted the right edge runway lights for centerline lights. He touched down on concrete matting about 40 feet right of the runway-edge lights, used left brake and rudder to steer back to the runway, wiped out a runway distance marker, and took the wire as instructed.

The incident report contained the comment that two, late lineup corrections just as the pilot reached minimums caused him to stay on the gages too long before transitioning to visual reference. Weather reported to be at or near minimums provides little time for anyone to change his scan from the gages to look for the runway. Pilots should be prepared to wave off any approach which requires large corrections just prior to touchdown.

Wrong Target. A flight of three A-6s launched from a CVA at night for visual dive-bombing on an unmanned target ashore. Each *Intruder* was loaded with Mk-76 practice bombs and Mk-45 flares.

Other aircraft were on target when they arrived, so the *Intruders* orbited well clear of the target complex. Soon it was their turn, and the lead A-6 (with the only operable TACAN) confirmed their position and led the flight to the target. Flares from the preceding flight further helped pinpoint the unlighted target.

The lead A-6 made a level pass at 5000 feet and released two flares. Meanwhile, the other two aircraft climbed to altitude for 30-degree visual, dive deliveries. One flare illuminated as programmed, but the other apparently didn't light up until ground impact. At any rate, there was plenty of light. The two attackers completed their deliveries, and the lead made a 10-degree, 500-foot, visual drop. The three then joined up and returned to the CVA.

Later, a message was received that a civilian camper parked 4 miles south of the target had been clobbered by a Mk-76 believed to have been dropped by an A-6. There were no personnel injuries, but damage to the camper was extensive.

When the incident was reported, the carrier confirmed the probability that an A-6 was involved.

It seems as if there was general pilot unfamiliarity with the target, possible disorientation, or misinterpretation of available visual cues. At the last minute before launch, an experienced aviator was replaced as flight leader.

To prevent this from reoccurring, positive target identification will be made prior to ordnance release, but only after members of the flight have familiarized themselves under daylight conditions. ◄

It is recognized that most Navy airfields have air traffic control plans in effect similar to the one presented in this article, but there are differences. One airfield surveyed, for example, uses a buzzer/light system instead of voice for communications between GCA and Tower at the final clearance checkpoint. This does not provide for transmission of the aircraft identification, nor does it provide for an *automatic* broadcast on tower frequency concerning GCA traffic. This is a matter left to the discretion of the Tower.

The primary purpose in presenting this article is to promote interest and attention among traffic controllers in the safe handling of a mix of GCA/VFR traffic. It should also serve to provide pilots with insight into control functions which take place during an approach. – Ed.

Hazards of the GCA and the Standard VFR Traffic Pattern

By CAPT L. "V." Culp, USMC
HQMC Terminal Air Traffic Control Systems Office

IN REGARD to the March 1973 APPROACH articles "Distraction and Reaction" and "GCA Near Miss," I share the frustration of the air traffic controller (having been there).

I am not one to recommend a procedure change each time an incident occurs – heaven knows the times I've argued with those who would emotionally direct a "fail-safe" procedure beyond reality.

I believe the majority of air traffic control facility officers will agree that one of the more hazardous airport operations is the *GCA entering into a VFR airport traffic area,* i.e., GCA and standard VFR entry traffic entering an airport traffic area on the same, converging, or crossing flight paths, under the control of different controllers of the same ATC facility. Of necessity, such procedures are standard practice at the majority of our Naval/Marine Corps air stations. The two most critical areas of this operation are when aircraft enter the initial for an overhead break and on base leg of the standard airport traffic pattern.

Is There a Better Way?

Recognizing the above hazard, I invite each air traffic control division officer to reevaluate and adopt the following (or similar policy and procedures) at their ATC facility:

- Continue indoctrination of the above hazard to both ATC personnel and airport users.
- Educate controllers and airport users that the VFR airport traffic area is sacred to the local controller (tower operator) and shall not be violated without his authorization.
- Depict GCA and standard VFR course rules, with appropriate cautions in the airfield operations manual.
- Establish an intra-facility letter of agreement (or include in the ATC facility SOP) between the control tower and GCA. This agreement is the ATC facility's basic guidance tool and should, as a minimum, emphasize three specific areas: two GCA to tower checkpoints (to include a GCA traffic advisory broadcast) and an automatic waveoff procedure.

Checkpoints

A GCA-to-Tower Traffic Advisory Checkpoint (normally 7-10 miles on GCA final approach) includes:

- Aircraft identification.
- Number and type aircraft.
- Actual position of aircraft (recognizing time delay between coordinators).
- How the approach will terminate, i.e., final landing, touch-and-go, or low approach.

Acknowledgement from the control tower should authorize GCA traffic to continue to the next checkpoint and enter the airport traffic area. If for

various reasons GCA traffic cannot be cleared to enter the airport traffic area, the GCA controller and pilot should be so advised and given the reason along with guidance to assist the pilot in making a decision to go around for another try or contact the tower for standard VFR entry.

> *Note:* A pilot's retention of an IFR flight plan does not afford priority over VFR aircraft. For example, this may require the pilot of an arriving IFR aircraft to adjust his flight path, as necessary, to enter a traffic pattern in sequence with arriving VFR aircraft (refer to FAA ATP 7110.8).

A GCA-to-Tower Final Clearance Checkpoint (normally 3-5 miles) includes:

- Aircraft identification.
- Actual position of aircraft.

At the final clearance checkpoint, the local controller should be required to:

- Clear the GCA traffic in accordance with the pilot's request or direct the aircraft out of the airport traffic area in a prescribed manner set forth in the intra-facility letter of agreement.
- Broadcast a GCA traffic advisory: "GCA traffic advisory . . . " number and type of aircraft, position, and how the approach will terminate. Example: "This is Podunk Tower with a GCA traffic advisory – two F-4s, 3 miles north, landing runway 18."

Broadcasting a GCA traffic advisory promotes a retention factor for the local controller, confirms the fact to the tower coordinator that local control has the correct information, and simultaneously notifies all pilots monitoring tower frequency of the GCA traffic, what it is doing, and what it will be doing upon reaching the GCA touchdown point.

By keeping pilots aware of the total airport traffic situation, I have found that we not only influence safety but reduce the number of transmissions the local controller is required to make to ensure an orderly flow of airport traffic – sequence and separation.

At certain ATC facilities, the GCA traffic advisory broadcast would be more appropriate at the first GCA-to-tower traffic advisory checkpoint. This would be especially true if the GCA final approach course and initial of the overhead approach pattern crossed altitudes.

Automatic Waveoff Procedures (normally 2 miles)

For various reasons, such as controller workload or breakdown in intra-facility communications, the GCA controller may be unable to receive a final clearance issued by the local controller. The pilot should be made aware of "no clearance received from the tower," and except for declared emergencies, he should be directed out of the airport traffic area in accordance with standard procedures set forth in the intra-facility letter of agreement. Procedures for declared emergencies should also be considered.

Flexibility Through Knowledge

Whether airport traffic control service is an art or a science, I'll not argue. Continued indoctrination and training, however, are essential in gaining the required knowledge that will assist controllers in making prompt and proper decisions. When providing airport traffic control service, some areas of action must be left to the discretion of air traffic controllers. Nevertheless, discretion is enhanced through professional knowledge.

It should be recognized that there are numerous decisions made by each air traffic controller during each watch and that, in reality, a certain percentage of these decisions will be in error. This error factor is reduced (never eliminated) with proper policy, procedures, indoctrination, and training. ◄

Anymouse

Why didn't you...?

AFTER several days of rainy weather, it was a nice day for a NATOPS checkride in the C-1A. I had 2500 hours in S-2/C-1 types, was a designated plane commander and instructor pilot, and was the ship's C-1A NATOPS officer with recent S-2 RAG experience. The pilot getting the checkride was a very senior type with lots of experience in single-engine jets, but just a few hours in the C-1A.

The flight check went smoothly for an hour or so – with single-engine and other emergency procedures being accomplished.

The purpose of Anymouse (anonymous) Reports is to help prevent or overcome dangerous situations. They are submitted by Naval and Marine Corps aviation personnel who have had hazardous or unsafe aviation experiences. These reports need not be signed. Self-mailing forms for writing Anymouse Reports are available in readyrooms and line shacks. All reports are considered for appropriate action.

REPORT AN INCIDENT
PREVENT AN ACCIDENT

Then came a call from a local Navy tower asking if we would pick up some passengers and return them to Homeplate. Since ground transportation was a real problem in this area, we obliged them. Only one maneuver remained to complete the NATOPS checkride . . . a simulated single-engine landing, which I decided could be completed at Homeplate.

The left-seat pilot set up the single-engine approach as advertised – wider than normal, but a little fast. A rain cloud had passed over the field leaving a wet runway. On final, the aircraft was a little high and still 10 knots or so fast. I had an impulse to take it around, but we still weren't that far out of tolerance for a single-engine landing.

We touched down fast on the 5000-foot runway about 1000 feet past the threshold. Everything appeared OK until the pilot hit the brakes and noted poor braking. By this time, the flaps were up for maximum weight on the mainmounts, but braking was poor. I could see and feel that the brakes weren't doing their job. I took control in the right seat with the same result – little or no braking.

I started to pop the flaps and add power (1500-2000 feet remaining and 60 to 70 knots), but was aware of an out-of-trim condition and slippery runway, so I decided against that. We pressed on. I think we were getting some braking, but it was very poor.

With 1000 feet remaining, it hit me that there was no way we'd get it stopped before the end. I yelled something like "Standby to raise the gear," because at the end was a sea of mud from several weeks of rain. Then it flashed through my mind that the left-seat pilot would in all probability not be able to get the gear up in time due to the difficulty in actuating the solenoid override. I wasn't sure he had actuated it before, and as a former instructor pilot, I had seen many pilots fumble with it 3 or 4 times before doing it right. I wasn't about to go off into the mud with the gear down. So, with about 350 feet and 30 knots remaining, I went to full power on the port engine and stood on the right brake for an intentional ground loop – the only course of action left.

The aircraft rotated 120 degrees to starboard and slid sideways to a stop with the port mainmount less than 10 feet from the runway end. Didn't even blow a tire! We taxied in and shut down, eternally grateful for our undeserved good luck. I've asked myself many times since what I would have replied when the accident board asked me the critical questions:

- Why did you conduct single-engine practice with passengers on board, in violation of NATOPS?
- Why didn't you wave off a high/fast approach to a wet

runway?

- Why didn't you make a touch-and-go when you saw braking was poor, while you still had speed and runway ahead?
- Why didn't you raise the gear before you ran off into unprepared terrain (assuming we had gone off)?
- Why?????

Wisermouse

Agree! It would have sounded pretty limp. Wonder also if you didn't have some "heavy" inhibitions.

What Restrictions?

SOME months ago, NAVAIRSYSCOM imposed some important airspeed and configuration restrictions on one of our aircraft. All of us, except for one senior gent, operate it very carefully.

Now, this lone exception is a real hotdog test pilot who flies with total disregard of the restrictions.

Sooner or later the bird's going to be a buttbuster – his, or more unfortunately, probably someone else's. If he alone was involved in this risk, it wouldn't be so bad. But, it will undoubtedly be the lot of one or more of us when it lets go.

My question is then, won't NAVAIRSYSCOM be deluded into thinking the restrictions weren't enough . . . or that material failure occurred despite the restrictions? I suspect you'll agree with me that he makes a mockery of our NATOPS and squadron safety program.

Shookmouse

Unless there are extenuating circumstances or plainly visible evidence to the contrary, yes, NAVAIRSYSCOM **will** *believe their restrictions were optimistic.*

Wonder just how many birds have been "broken" **before** *some innocent strapped it on and launched?*

Not to make matters worse, but if your CO, OPS, or ASO can't corral this dude, you've got **real** *problems.*

Perhaps he'll read this . . . on the bulletin board . . . in his IN basket, or . . . behind his windshield wiper blade.

Parachuting Hazards

A TEAM of four parachutists climbed aboard an aircraft for the trip to 7500 feet. Over the exit point, they departed the aircraft and commenced a series of relative work maneuvers. Separation, previously agreed to be at 3500 feet AGL, was adhered to.

Openings were staggered from 3000 to 2000 feet AGL. Immediately after opening, an aircraft entered the area and flew past two of the jumpers. The aircraft then made an approach to the runway in an attempted touch-and-go.

Since the drop zone was situated nearby, and because of the possibility of the aircraft striking one of the jumpers, a quick-thinking ground safety officer ran onto the runway, ignited a Mk-13 day smoke flare, and waved it vigorously at the approaching aircraft. The aircraft suddenly pulled up and departed the area.

Meanwhile, the jumpers were watching all this and cleared the area as best they could, landing in nearby open fields, back yards, etc. No injuries were sustained.

NOTAMS had been filed each week, stating the area, altitude, and time period covering paradrops.

This is my second close call in 8 years of military parachuting in both CONUS and overseas, not to mention other not-so-close calls. I suggest again that pilots take a close look at NOTAMS before going aloft.

Paramouse

If you jocks don't believe Paramouse, see the December '72 APPROACH centerspread. GET with Paramouse's advice.

Recommendation

AN F-4J was being ground refueled from a truck, and at the same time, a lineman was working behind the aircraft repacking the drag chute. When the tanks were filled, fuel from the vent mast at the tail soaked the line worker from head to toe. The chute was also soaked and had to be replaced.

Normally, the F-4J does not vent fuel when filled; but if fueling pressure is great, it will relieve pressure plus some fuel through the vent mast.

Recommendation: Never permit line personnel to repack chutes near any aircraft being refueled.

Fuelmouse

We're happy to pass on your recommendation. Could save someone an unexpected, extremely uncomfortable dunking . . . or worse.

This article, originally a Letter to the Editor, covers a number of familiar operational hazards facing naval aviation today. It is presented so that each of us, from flag officer to nugget, design engineer to NARF technician, can reflect on what we as individuals might contribute to the solution of these continuing problems. – Ed.

In Defense of the Pilot

By LT T. C. Browne

AS A naval aviator, I regularly read the WEEKLY SUMMARY OF MAJOR AIRCRAFT ACCIDENTS. The SUMMARY, although evangelical, is interesting and beneficial to an aviator. Nevertheless, a recent issue was somewhat irritating. Issue No. 52-72 discussed pilot error accidents. These accidents were categorized by cause factor, to wit:

- Lack of knowledge.
- Lack of skill.
- Lack of discipline.

The ensuing discussion made it perfectly clear that the only person to blame for a pilot error accident is a stupid, incompetent, or reckless aviator. While these three factors obviously exist, by so classifying them, a great disservice is done many aviators who are involved in such accidents. These categories of pilot error do not include two frequent causes:

- Fatigue.
- Errors induced by engineering design.

I suppose it's easy to look at an accident where a pilot made an obvious goof and say, "Aha! Lack of knowledge of proper procedures." I am a VP aviator who knows what fatigue can do to mental alertness. An otherwise perfectly knowledgeable pilot can make simple errors after a day at his desk as a department head or schedules officer followed by a night on patrol.

The fatigue problem is an even greater threat when combined with inadequate cockpit design. As an example, the covered UHF phone piece in the P-3 is located at the pilot's position overhead. At night and low altitudes, it is almost suicidal for the pilot to fly and, simultaneously, use the "Red Phone." Result: The phone is passed to the copilot, thus detracting from *his* ability to monitor the pilot and interfering with the engineer's view of the instruments. Additionally, the information received must be relayed to the TACCO via ICS, further detracting from cockpit duties.

Meanwhile, the crew is fatigued after 10 hours of flying and probably after a day in the office, and their scan pattern slows down. They become preoccupied with tactics and communicating on the red phone, clip a wingtip in the water, and disappear. Verdict: Pilot error.

Why wasn't the red phone located so the TACCO could use it? It's very rare that he's essential to safety of

between. With the lengthy periods of down time, pilots go for months without flying, they then must go on a crash program to get their hours. Their flying is an appendage to normal duties and is not the kind of routine operational flying that builds competence. I think it's dangerous, but beyond my opinion, the FAA has studied proficiency flying and found that an experienced aviator who stops flying completely responds just as readily as an experienced aviator flying infrequently when they enroll in a refamiliarization course. All Navy pilots go through a RAG prior to an operational tour. Why risk their necks in a half-hearted and unnecessary effort to maintain their flying skills?

I'm just a little ole' lieutenant with only 2000 hours aloft. I've never had an accident, pilot error or otherwise, but I'm tired of seeing the poor pilot take the rap for things over which he has minimal control. I

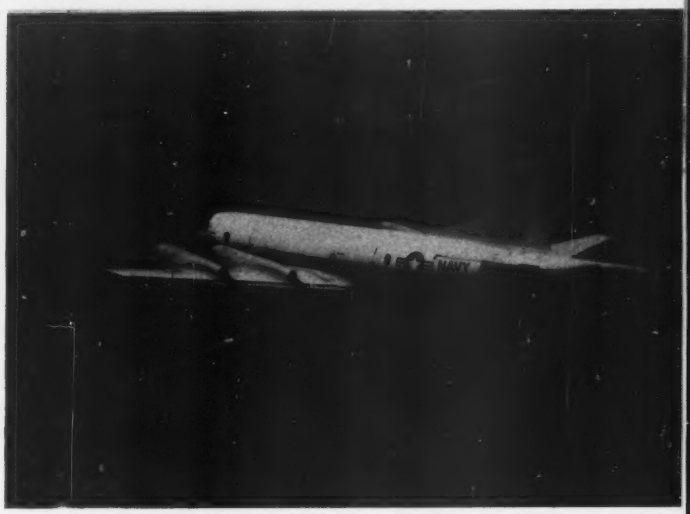
flight. Why didn't the crew stay out of the office? Probably because the squadron is trying to operate on a wartime readiness level and still keep up the peacetime paper shuffle.

It's so easy to ascribe an accident to pilot error. Even in the unlikely event the pilot is around to defend himself, he would be summarily dismissed as a self-apologist for suggesting the accident was fatigue or design induced. It's much more difficult to get out in the field and ensure stringent enforcement of necessary crew rest periods.

One squadron operations officer developed a rest period formula for flight crews. By the time the XO and CO finished with it, it was so full of loopholes that it was meaningless. Meanwhile, peacetime operational commitments became thoroughly indistinguishable from wartime urgency. Why isn't there a professionally developed, scientifically substantiated, crew rest program guaranteeing the physical readiness of flight crews? A pilot would be censured for drinking within 12 hours of flying. He should be equally culpable for working rather than resting prior to a lengthy flight.

With respect to that red phone problem, my last squadron's safety officer submitted a safety UR on it in 1970. The red phones are still in place over the pilot's head. Another example: In the early P-3Cs, the VSI and accelerometer were exactly reversed from their position in the P-3A . . . quite a thrill for a guy who routinely flies both aircraft.

With the proficiency aviator, the situation is even worse. At my station, CRT aircraft are decrepit, maintenance is poor, and repair parts are few and far



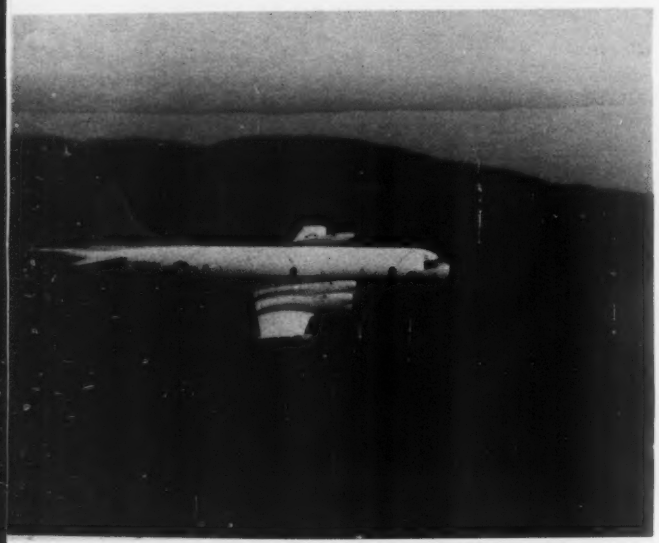
imagine your response is that observers of unsafe conditions should bring the matter to the attention of higher authority. But, we're all taught the "can-do" spirit! How can a junior officer trying to be a charger make any points if he says he is too tired to fly? What good does it do to report an unsafe design if there is no money to change it and it takes years to correct the problem anyway? In addition, many potential or actual problems are so commonplace, they frequently aren't even noticed by the people close to them.

While I appreciate your past efforts, I think if you are really interested in aviation safety, you could do more than merely preach its gospel. For starters, I think it's

high time the NAVSAFECEN analysts climbed down from their ivory towers and got out in the field actively looking for problems and solutions. While waiting for that to happen, however, I suggest you be a little more charitable and accurate when you try to arbitrarily categorize the causes of pilot error.

NAVSAFECEN analysts, to a man, have great empathy for pilots involved in aircraft accidents. Having served in the Fleet themselves, they are often keenly aware that "there but for the grace of God, go I." Their goal is to analyze causal factors accurately and classify them in a manner which will be most useful in preventing future accidents. No one imagines that the system under which they operate is perfect, but it is the best yet devised.

Factual information, rather than charity, is the



basis for analyzing and classifying accident causes. In most cases, the facts are developed by investigators thoroughly conversant with the operating demands placed on the pilot, e.g., most investigations are made by squadronmates of the pilot involved. These same squadronmates do the initial analysis, develop conclusions as to causal factors, and make recommendations. There is little room for NAVSAFECEN analysts to be arbitrary, even if they were so inclined. The analysts seek to promote a wide exchange of safety information. They are active in making informal visits to squadrons, responding to requests for safety surveys, and in attendance at conferences and symposiums relating to safety. In addition, they publish CROSSFEED for their respective communities and invite contact by individuals in the field (in person, by letter, or by phone). **The ivory tower in which they supposedly reside is a myth.**

You raise the question of fatigue and inadequate design as two factors predisposing toward pilot error in accidents. Your point is well-taken, and these factors are identified as causal factors in accidents whenever substantiated by facts. Unfortunately, the mere knowledge that these factors exist does not eliminate them.

Fatigue is a continuing problem. Although preflight crew rest is not discussed in General NATOPS (OPNAVINST 3710.7F), the inference is there, and wing/squadron commanders should be providing guidance in this area. (COMFAIRWINGSPACINST 3750.4 provides guidance for Pacific patrol squadrons. VR squadrons are also well-covered on the subject.)

The individual naval aviator must share responsibility (along with supervision) for eliminating fatigue as a factor in accidents. You ask the question "How can a junior officer trying to be a charger make any points if he says he is too tired to fly?" This is a tough one, but the answer is clear: If you're too tired to fly – and you know it – bring it to the attention of higher authority. Only in this way can the matter be brought out into the open and dealt with (see "An Illusion of Safety" APPROACH July 1972).

Inadequate cockpit design has been implicated in a number of accidents – and so recorded. Extensive efforts are being made to eliminate design problems in new aircraft and old. Unfortunately, lack of money often restricts or delays correction of design problems in older aircraft. As for the red phone in the P-3, it is at the TACCO station in the P-3C. An ECP has been approved to retrofit the P-3A/B, but actual installation is awaiting funding.

The "can-do" spirit deserves a word or two. It has been suggested that we in the Navy should foster a "can-do it right" spirit instead of a "can-do it any way" spirit. The problem covers the entire spectrum of naval aviation. It will not be resolved until there is complete understanding between those who lay on commitments and those who must carry them out. This puts the onus on **everyone** *to be realistic and forthright in deciding what is to be done and what can be done without incurring unacceptable risks.*

We will not attempt here to evaluate the CRT program. Suffice to say it is in a state of change and is receiving continuing attention at the highest levels. The conditions at your station (described in your letter) are obviously poor and will be of interest to those managing the CRT program.

Keep plugging away. – Ed. ◄

Bravo Zulu

ENS James E. Dinkins
and
ENS William G. Neilson

Ensigns James E. Dinkins and William G. Neilson

ENS Dinkins and ENS Neilson, both student naval aviators, were on their first, syllabus, solo cross-country flight – returning to NAS Corpus Christi from NAS Pensacola. Their TS-2A *Tracker* was cruising at 6000 feet, above a 3300-foot overcast with tops at 4500 feet.

At 8 NM west of the White Lake VORTAC, the No. 1 engine began to run rough. Oil was noted on top of the engine and cowling, but temperatures and pressures remained normal. Nevertheless, an emergency was declared, and a decision was made to divert to the Lake Charles Municipal Airport.

They set up for a straight-in approach to runway 33 using the ILS back course. At 15 NM out, they made an uneventful descent through the overcast. When they levelled out at 1500 feet, however, smoke began to stream from the No. 1 engine. They immediately executed the emergency shutdown checklist. The engine failed to feather.

The No. 1 prop control was pulled aft to full decrease, but the drag did not decrease appreciably. It took full RPM and 45 inches MAP on the good engine to maintain altitude. The landing gear was not lowered until they had the field made. The landing and roll-out were uneventful.

Postflight inspection revealed that the outboard spark plug on No. 1 cylinder had come completely out of the cylinder and was hanging by its electrical lead. When the spark plug worked loose in flight, it apparently cut the oil line to the feather pump, preventing any oil flow. Fuel and oil coming from the spark plug hole and hitting the hot engine were the probable causes of the fire.

When interviewed after the flight, the pilots stated: "We felt nervous at the outset, but settled down when the decision was made to land at Lake Charles. We feel the extensive training we have received in single-engine emergency procedures really paid off."

ENS Dinkins and ENS Neilson are to be commended for their flying skill, crew coordination, and sound judgment which averted personal injuries and prevented damage to the aircraft.

Well done!

DEHYDRATED TIGER

BEHIND the wheel of his car one morning last summer on his way to work, more than once a pilot caught himself losing his train of thought. Later on, in the preflight briefing, he couldn't seem to keep his mind on the business at hand.

"Just early morning grogginess," he rationalized, and proceeded to preflight and man the lead aircraft for a section takeoff.

After taking the runway and before engine runup, he collapsed.

The aircraft, with its unconscious pilot, taxied down the runway and veered off to the left. It came to a stop in tall grass. When the crash crew arrived, opened the canopy, and shut down the engine, the pilot revived.

Whew!

Severe dehydration and heat exhaustion are the key words in this incident. Only 2 days before, the pilot received an up chit after being grounded for the flu. On both days prior to the incident, he flew two hops. The preceding night, he had "4 or 5 beers" at the club. The next morning, he had diarrhea and felt "a little dehydrated." In spite of this, after a breakfast of Sugar Pops and four glasses of orange juice, he reported for his scheduled flight.

The investigating flight surgeon notes that there was a new baby in the family and, apparently, the pilot had not been getting much rest. While sleeping on a black vinyl couch during this period, he had a number of night sweats because of the heat and his illness. (The squadron's regular flight surgeon who might have detected the pilot's condition was on leave at the time.)

The "might haves" in this incident boggle the mind, and the squadron is fully aware of them.

"Although no injury to personnel or damage to aircraft resulted from this incident," the CO writes, "the possibility of an aircraft accident occurring here is astronomical. If the pilot had lost consciousness any time after the engine runup rather than before, loss of life and aircraft would most probably have resulted. This occurrence is a classical example of how a pilot can ignore not one but several physical warnings and almost lose his life because of it.

"It is mandatory that all pilots reevaluate their personal criteria for the physical condition they must be in prior to any flight," the skipper continues. "Individual mature judgment is paramount to any safety program . . . No mission in this squadron is worth the life of a man or damage to an aircraft. The squadron has been reminded that the tiger spirit must be tempered with the tiger's basic instinct for safety and survival."

Now to the subject of dehydration . . .

"Flying is a thirsty business," somebody said once. And it is.

Keep the air moving, drink plenty of nonalcoholic liquids, and use ample salt with your meals.

When atmospheric pressure decreases, water evaporates from your body at a greater rate than at sea level. On a prolonged flight, when you are not able to replenish your water, water loss can become significant. Other factors which increase water loss in flight are high cabin temperatures and the dry atmosphere at altitude.

If you are operating in tropic or semitropic areas or even sections of CONUS in the summer months, you have probably sat in a hot cockpit before takeoff for what seemed like forever – sweat pouring down and humidity preventing its evaporation. Under such circumstances, aboard ship or at an airfield ashore, the sun's rays beating on your canopy (the "greenhouse effect") and heat radiating from metal and concrete surfaces can turn your cockpit into an oven. If you are dehydrated because of illness, a hangover, or just plain lack of water, you're in trouble before you start.

You can't measure the degree of dehydration by thirst, but thirst is the first effect of dehydration. Progressive subjective symptoms are vague discomfort, a sense of oppression, and loss of appetite. Then comes what the doctors call "economy of movement" along with lagging pace, flushed skin, and growing impatience. Some people become weary and sleepy and "could care less." Your arms, hands, and feet can tingle, and you may have a headache. Body temperature, pulse, and breathing increase. Speech becomes indistinct, and weakness and mental confusion progress. That's enough symptoms – suffice it to say, in a situation such as survival in the desert or at sea with no water, the ultimate result of dehydration is death.

What can you do to cool it?

- *Maintain your water balance.* That means drink nonalcoholic liquids to make up for the sweat you've lost. Drink often and in moderate quantities. Don't tank up all at one time.
- *Maintain your salt balance.* Salt with your meals should do the job. If you feel you have further requirements, see your flight surgeon or station medical department.
- *Regulate your physical activity to a level consistent with avoidance of strain.* Don't go jogging in full flight gear out to your aircraft when the thermometer reads 90°F plus in the shade.
- *Allow approximately 4 to 7 days for acclimatization, and increase your physical workload gradually over that period.* When you arrive some place that's hotter than where you came from, take it easy at first.
- *Give yourself work/rest cycles to permit your body to dissipate heat stored up during periods of activity.* Take frequent breaks to cool off and catch your breath.
- *Wear light clothing and head covering which do not impair evaporation but do protect against heat absorption from your surroundings.* We won't argue that nomex isn't hot, but fires are hotter. And your helmet, well, it's not an ice bucket, but there's a survival tradeoff there, too.
- *Ventilate and dehumidify indoor working areas.* Scrounge and utilize all the fans you can find, and install them in squadron spaces. If you can't condition the air, at least you can move it around.

But, back finally to the incident we began with. Nobody knew better than Pilot "X" that he had no business flying. Tiger spirit is great, but the odds aren't worth it in this kind of situation. The price of an indomitable, risk-all tiger image here could easily have been an aircraft and a pilot.

Too high!

Peace, after a period of sustained conflict, brings with it a psychological letdown which invariably increases complacency. Therefore, it is imperative that naval aviation . . .

TRANSITION TO PEACE SAFELY

By LTJG David L. Sturgeon

THE CHANGES brought about by a peacetime environment necessitate a readjustment in mental attitude with respect to naval aviation safety. With the reduced tempo of operations, the "can do" attitude created by operational commitments must be restructured to a "can do it right" attitude. Anyone who has seen the pace of operations in WestPac can attest to the fact that unsafe practices have taken place in the name of operational necessity.

Pilots have taken marginally ready aircraft. Maintenance has made the "temporary repair" to get the hop out. This is the type of safety compromise that can be avoided in a peacetime environment. We should now have the time to do our training more thoroughly and completely and perform our missions without a safety compromise. Largely, all that needs to be done is to live up to the letter of the safety programs already established.

The following list contains several specific suggestions for creating this proper mental attitude:

- Give maintenance the added time it might take to get to the cause of a discrepancy. Don't rush the troubleshooting. If a tough problem is solved now, the next time a similar situation arises, it will be much easier to repair.
- In training, stress the necessity to get the younger, less-experienced men qualified to perform the difficult maintenance tasks. Obviously, with personnel cutbacks, some of the experience will soon be gone. It's going to be increasingly critical to train all people thoroughly. If a day of the week is set aside for training, training

should not be cancelled unless operational necessity absolutely dictates.

- When an aircraft comes into check, take the time to fix the numerous "up" gripes. How many times does it happen that an aircraft comes out of check with the same "up" gripes as when it went in?
- Enforce the NATOPS program; don't just pay it lip service.
- Reduced carrier operations will require additional field carrier landing practice to maintain a safe level of carrier landing proficiency.

Lest a trend toward complacency develops among aircrews and maintenance personnel in the slower pace of a peacetime environment, these preventive measures are offered:

- Keep every man informed as to the importance of his job, whether it be flying or performing maintenance.
- Ensure wider dissemination of safety information (publications and mishap reports). If everyone is continually made aware of potential safety hazards, it is doubtful that a complacent attitude will develop.
- Utilize time created by a decreased operating tempo to rigorously train individuals and to emphasize safety aspects of aviation through increased use of standdowns, back-in-the-saddle programs, safety councils, etc.

The key to making the transition lies in stressing safety by example. If a pilot accepts an aircraft that is marginally ready, maintenance has less incentive to keep that aircraft more than marginally ready.

If the maintenance chief allows an airman to take a shortcut now, he'll likely continue to take shortcuts until someone gets hurt. Any task can be done properly. If it's done right, it's done safely. Likewise, if NATOPS requirements are enforced religiously, complacency is not likely to develop.

It all boils down to professionalism. ◄

Pro-Am

What's the Real Difference?

By A. W. Stoeckel

THE BING Crosby Pro-Am; The Andy Williams Pro-Am; it seems like everybody's sponsoring a Pro-Am nowdays. Pro-Am, of course, is the increasingly popular type of golf tournament that pairs leading professional golfers with outstanding amateur partners.

These amateurs are well-known names in their own fields and often command bigger galleries than the pros themselves. Nonetheless, whether the setting is the craggy, cypress-dotted links of Del Monte Forest, the lofty, treacherous Torrey Pines, or the searing, dusty Desert Inn, this conglomeration of celebrity-studded names is known as the amateur half of the Pro-Am.

The point of discussion here is to determine just how wide the hyphen is that separates Pro-Am. Is it a matter of physical ability? Is it mental? Emotional? A matter of personal choice and pride? Pros play better? Pros play for pay – amateurs play for fun? Maybe it's none of these things, and maybe it's all of them. So as a newcomer to the galleries, how does one pick out the Pros from the Ams? What's the real difference?

A spectator cannot readily distinguish the two groups by appearance. Costumes are generally the same – colorful slacks and sweaters – impeccably polished shoes – turtleneck shirts – huge, gaping golf bags with umbrella handles sticking out – floppy head covers dangling from shiny woods. Moreover, Pros and Ams alike come in assorted heights, weights, and sizes, so stature is not an indication. Even the golfer's swing is not a reliable clue. So where is the dividing line? Can it be given a concrete dimension? It might be simply stated that the dimension is found in the term itself – PROFESSIONAL. But even that concept lacks precise definition – or does it?

Let's analyze the meaning of professional and amateur by following a twosome – Joe Proe and Sam Amm as they arrive at Monterey, California, for the annual Crosby clambake.

Joe Proe and Sam Amm are long-time acquaintances and will be playing as a team in the celebrated "Crosby." Sam arranged to get away for a few days and is ecstatic about playing in the tournament and being a part of the glamour and general merry-making associated with the tournament. He arrives Monday and checks in at the Del Monte Lodge (cause "that's where it happens, Baby,"), bordered on all sides by golf courses and cocktail parties. Sam expects to get acquainted Monday night and Tuesday and probably "hit a few" Wednesday – then the beginning of the 4-day tournament on Thursday. He quickly changes out of his business suit and into the casual attire of the afternoon cocktail crowd, and with visions of how he's going to carry No. 16 at Cypress Point dancing in his head, he advances on the bar.

Joe Proe also arrives early Monday afternoon and decides on the Mark Thomas Hyatt House – a little less hectic than the Lodge and more conducive to an early secure. He takes care of the administrative details required by the committee, registering for both himself and his playing partner, Sam. Next he checks his schedule, noting practice times and the order in which he will play the three Crosby courses. Later in the day, Joe meets with his assigned caddy to discuss procedures and schedules and to check his equipment and clothing. Tuesday he plays practice rounds at Spyglass Hill and Cypress Point, noting distances of all shots; possible trouble areas; alternate lines of approach to greens; the general condition of tees, fairways, traps, roughs, and greens; and discusses strategy with his caddy. Sam calls Tuesday evening, says he's raring to go – gonna' kill 'em – come on out for a drink, and how about a few pointers on the practice tee tomorrow? Joe says, "Good to hear from you, Sam, take a rain-check on that drink, and OK, see you by the tennis courts at Pebble Beach tomorrow afternoon."

Wednesday morning Joe Proe hits a hundred shots to warm up, plays Pebble Beach, logging all vital information, and returns to the practice tee to hit middle irons. Joe's caddy notes that Joe is slightly higher and shorter than normal with his middle irons. A good point to remember.

Sam charges up in a golf cart in company with a friend and a martini. Sorry he's late – "Gad what a party last night – how you hittin' 'em Joe?" Continued

"OK."

"Say, want you to meet an old friend of mine – gonna go around with us on Thursday. Say, Joe, I'm gonna have to postpone our practice session today. There's a little group getting together this afternoon down at the Lodge – and the old swing's in the groove anyhow – don't want to screw it up – right, Joe?"

"Sam, with your sweet swing I wouldn't practice either."

"OK, Joe, see you later – hey, where do we play tomorrow?"

"Spyglass."

"What time?"

"8:05."

"Damn, that's early. You know what they did with my sticks?"

"At the caddy shack."

"Who's my caddy?"

"133, Silva, here's his phone number."

"Hey, by the way, are we all signed up?"

"Right, Sam, all set."

"OK, Joe, say, how about taking that raincheck on that drink tonight?"

"Wish I could, Sam, but we meet with the rules committee tonight – lot of local stuff."

"OK, Joe, see you tomorrow – gonna kill 'em, hey?"

"Right, Sam."

Thursday at 8:05 at Spyglass Hill two golfers looking very smart in their tournament best wait their turn on the tree-lined, dogleg par 5 at Spyglass. One golfer notices the size of the gallery looking for that *well-wisher* who promised to go around with him, waits to hear his name announced by the starter, and visualizes that boomer he's going to rip.

The other golfer notices a subtle breeze kicking up, the deep cut of the tee, and the morning dew still on the grass, and ponders the probable landing area of his drive, the angle and distance on his second and third shots, and thinks, "Maybe a two-wood instead of the driver."

Both men swing well. Both hit what appear to be good drives, and both stride jauntily down the fairway. But, only one is the professional.

One has prepared and maintained himself in the highest degree of physical and mental readiness. One has labored relentlessly to master the physical requirements of his trade and to improve his own dexterity. One has observed, carefully, every facet of the environment in which he is going to perform and has preplanned what recovery action would be necessary in the event that unexpected circumstances arise. One has meticulously checked the tools of his trade ensuring that his equipment would give him the best opportunity for success. One has realized the importance of the people who will support him and does his best to evoke and utilize their expert assistance. And all this before he ever strapped in.

Once his round begins, bolstered by a confidence that comes from total readiness, he is prepared to meet the challenge head on and to weigh analytically and respond professionally to all events which might affect his mission, and his game shows it.

A golfer aspiring to the title *Professional* will do well to reflect on Joe Proe and Sam Amm.

So will a Naval Aviator!

Making a 'Save'

THE GOALIE in ice hockey is similar to the pilot in command of an aircraft in one vital respect. When the defense fails to stop the play, or when the aircraft malfunctions, each is expected to "save" the situation.

The goalie has his wits, training, and moves. The pilot has the same, as witness the following "save" made by a truly professional pilot:

Immediately after takeoff, the A-7A rolled hard right. The pilot pushed the stick full left with no effect. Insertion of left rudder leveled the aircraft. Level flight was maintained with rudder. The pilot climbed to 4000 feet, declared an emergency, and dumped fuel. Control aug and attitude hold were selected with no apparent effect – then deselected. Use of aileron was attempted during the landing approach, but the stick was too stiff. Using rudder only, the pilot made a straight-in GCA to an arrested landing.

COMNAVAIRESFOR msg

notes from your flight surgeon

In Traction . . . Out of Action

DIVING into strange waters which may not be as deep as you think or may conceal rocks, stumps, or other obstacles is extremely dangerous.

A PR2 may have permanent partial disability from diving off an 8-foot embankment into a canal at a picnic last year. Although a friend told him to make a shallow dive because the water was shallow, he didn't think there was any danger. The canal was 60 feet wide, and he had seen water skiers come up and walk out of the water.

"I dove off in a racer's dive," he told investigators later. "Immediately after entering the water, I smashed headlong into a stump submerged in water approximately 1½ feet deep."

Two vertebrae fractured . . . at least 3 months off duty . . . and a lot of pain and physical difficulty. At the time the injury report reached the Safety Center, he was a long-term patient in a hospital neurosurgery ward.

Over a period encompassing the past four summers, some 40 Navy men and women sustained major injuries in recreational diving accidents. With few exceptions, the injuries were broken necks. In many cases, temporary or permanent paralysis resulted. There was one death.

If you don't remember anything else you've read here, please remember this: *Don't dive into unknown waters.*

Check out the water depth and the condition of the bottom before you dive anywhere. A chance that could put you flat on your back or in a wheelchair for the rest of your life is hardly worth taking.

(And pass the word on to your family and friends! – Ed.)

Reflective Tape

"THE FIRST indication that there were survivors in the water was the reflective tape on the helmet of one of the downed helo crew. This serves to reemphasize the value of the proper use of reflective tape in facilitating night rescue operations."

Aircraft Accident Report

Pounds of Prevention

DO you ever stop to think how much a little physical fitness and muscle tone might mean to you?

Mental acuity is stressed everywhere from safety posters to check rides. But how about that dirty word "shape"?

Experts tell us that a few minutes a day is all it takes for anyone to better his physical condition and performance. An effort of this type can pay off in a number of ways – from speeding up your reaction time to saving your life.

No one wants to imagine himself muscling his way out of a burning aircraft or having to tread water for hours after a bailout. But these situations are the extremes of distinct possibilities. The number of individuals unable to conjure up the added strength or endurance to fight their way out of a desperate situation will never be known. But even if it were just one man, that one individual, except for circumstance or luck, could have been you. Don't stop to consider this fact – initiate a fitness program *today*, compatible with your particular schedule, and *stay with it.*

The reward is increased confidence in your ability to handle that ever-present possibility of an emergency situation in your future.

Make it a part of your *personal* preflight.

LTJG Joe Croker, VP-45

Experimental "load-limited" seats in USAARL Bell UH-1J.

Reprinted from *US Army Agency for *Aviation Safety System Safety Newsletter* Vol. 2 No. 1

*USAAAVS Develops Crashworthy Seat

A NEW concept in crashworthy troop seats for Army helicopters – designed to minimize injuries in the event of aircraft accidents – has been announced by officials of the U.S. Army Agency for Aviation Safety. The unique, energy-absorbing seats were designed and developed jointly by USAAAVS, USAARL (U.S. Army Aeromedical Research Laboratory) at Fort Rucker, and U.S. Army Aviation Systems Command, St. Louis.

The seats, which feature a number of innovative "load-limiting" devices, were designed to safely attenuate crash forces up to 48G. A USAAAVS design team, headed by Joe Haley of the Systems Research and Technology Division, was responsible for the design and development of the seats. Acting under a $17,000 contract from USAARL, Northrop Worldwide Aviation Services constructed the seats at their Fort Rucker shops.

Development of the new seats constitutes a major historical landmark as the first, full-scale joint medical engineering effort to develop a safe passenger seat for Army helicopters. The seat design was based on data obtained from studies of helicopter crash injuries conducted by USAAAVS, USAARL, the U.S. Armed Forces Institute of Pathology, and the Army Surgeon General.

Note "inversion tube" seat legs and struts.

Acting in concert with the U.S. Army Aviation Center and other Army agencies in developing new seat concepts and requirements, the USAAAVS design team focused their efforts on both forward- and rearward-facing seats. Sideward-facing seats were ruled out early in the concept formulation stage because of the difficulty of providing adequate lateral restraint to seat occupants.

Physically, the new seats represent an innovative mix of specially designed, as well as state-of-the-art, energy-absorbing devices and occupant restraints. The most noticeable departure from conventional design practice is that the seats are suspended from the aircraft ceiling by a series of stainless steel cables. Other seat features include:

- *Stainless steel wire mesh seatpans* – Stainless steel screen seatpans are designed to deform under impact loading without providing an impulse rebound to the seat occupant. SAE 4130 steel seat frames are dished slightly to provide a measure of lateral restraint.
- *Restraint harness* – A special combination of torso and lap belts, similar to the automotive variety, has been devised. The belt features a spring retractor which eliminates manual adjustment and permits easy,

one-handed locking or unlocking.

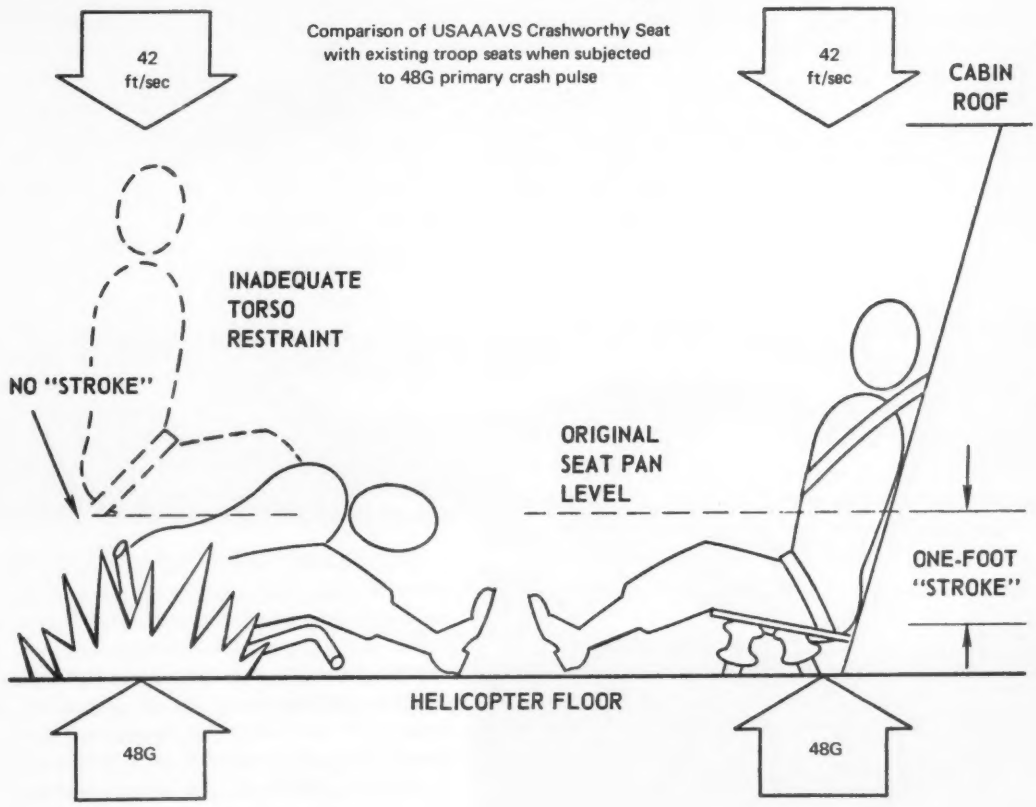
• *Overhead Stowage* – The new seats are easily folded and secured to the ceiling of the aircraft, thus leaving the helicopter cabin deck uncluttered.

• *"Inverted tube" seat legs* – Aluminum "inverted tube" (a General Motors-developed energy absorber) seat legs are used to anchor the new seat to the floor of the aircraft. The inverted tubes provide excellent impact attenuation by directing load paths to plastically compress the seat legs without breaking.

• *Weight* – Although the experimental troop seat will weigh slightly more than the present variety, Mr. Haley emphasized that the slight weight increase associated with the new type seats would be negligible in comparison with present seats. Haley also pointed out that the new helicopter systems procured by the Army will have more than sufficient strength to anchor the seats at ceiling formers since increased structural strength – for both medical litter use and in the event of rollover – is a firm requirement for new Army aircraft.

At present, two rearward-facing seats and one forward-facing seat have been completed at Fort Rucker and are installed in USAARL's Bell JUH-1 helicopter for ingress and egress testing.

The Directorate for Research Development and Engineering, U.S. Army Aviation Systems Command, will fund the construction of five additional seats. Both the first and second batch of seats have been earmarked for advanced dynamic testing by the U.S. Navy Aerospace Crew Equipment Laboratory, Warminster, Pa. Anthropometric dummies weighing up to 265 pounds will be used during this test phase. ◄

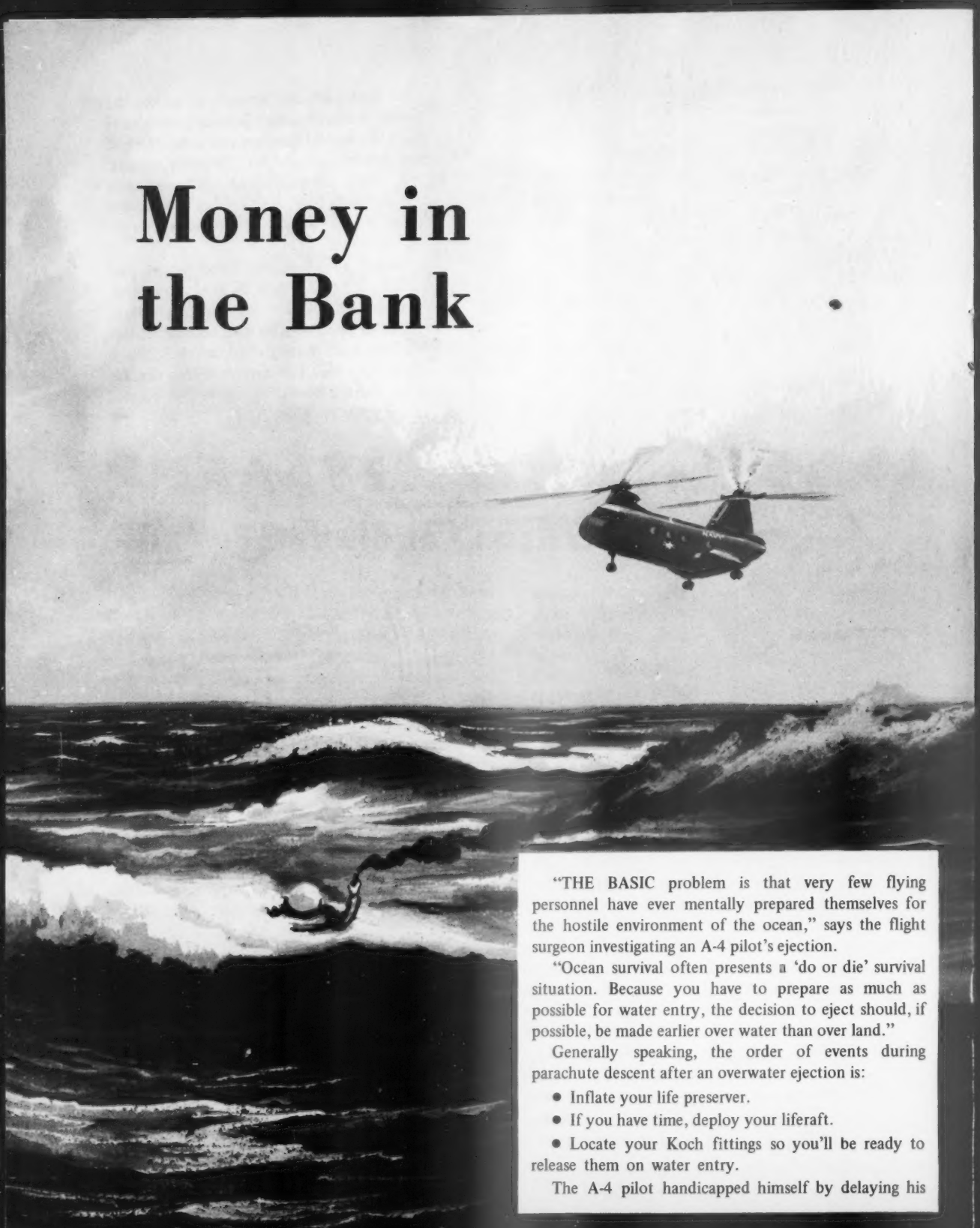


Comparison of USAAAVS Crashworthy Seat with existing troop seats when subjected to 48G primary crash pulse

Existing seats fail at 11G *primary* or *secondary* pulse.

USAAAVS seat yields at 14G *secondary* crash pulse. Note inversion tubes, seat pan deform, and suspension cables stretch to absorb crash energy.

Money in the Bank



"THE BASIC problem is that very few flying personnel have ever mentally prepared themselves for the hostile environment of the ocean," says the flight surgeon investigating an A-4 pilot's ejection.

"Ocean survival often presents a 'do or die' survival situation. Because you have to prepare as much as possible for water entry, the decision to eject should, if possible, be made earlier over water than over land."

Generally speaking, the order of events during parachute descent after an overwater ejection is:

- Inflate your life preserver.
- If you have time, deploy your liferaft.
- Locate your Koch fittings so you'll be ready to release them on water entry.

The A-4 pilot handicapped himself by delaying his

decision to eject, thus reducing time to prepare for water survival. Twice he tried to relight his engine after flameout at 3000 feet (due to engine system or component material failure or malfunction). He ejected at 1000 feet. Although other pilots can empathize with his attempts to save the aircraft, this NATOPS violation cost him parachute descent time, and parachute descent time can be crucial.

What troubles did the pilot encounter after he ejected at low level?

"I blacked out momentarily after ejection," he begins. When his vision returned he saw the aircraft canopy, seat, and drogue chute in the distance as well as his section leader's aircraft.

"I remember I looked down at the water and back at the horizon. The thought went through my mind that it was nice floating under the parachute. Then I was in the water.

"I pulled the right toggle inflating part of my LPA-1. At the time, I was under the impression that I had pulled both toggles."

Pulling the right toggle inflated the neck lobe and part of the right waist lobe of the life preserver. Because he thought he had pulled both toggles, he didn't realize that the left waist lobe was not inflated. If he had inflated the left side of the LPA-1, the squadron survival equipment officer pointed out later, he probably would have had less trouble keeping his face out of water and staying afloat.

"I began to get entangled in shroudlines because I had only enough time to disconnect my left shoulder fitting," the pilot continues. "There was very little wind, and the sea was forcing me right on top of the parachute. I was having difficulty keeping my head above water – I tended to float forward. Finally, I got the right riser disconnected, and except for a few shroudlines, I was free of the parachute.

"I still had my seat pan on. I didn't want any more items to tangle with the shroudlines, so I left both seat straps connected. Then I wanted to get the liferaft out because I was swallowing a lot of water. I attached the raft lanyard to my torso harness and disconnected the left strap of the seat pan.

"The helos were having trouble finding me even though I was waving. I was going to get my radio out, but decided to use a day flare instead. I also figured I didn't need another line around my body. I was still swallowing water."

In his green nomex flight suit and predominantly white helmet, the pilot blended in with the ocean and whitecaps. As one of the helo pilots said later, "He was extremely difficult to spot even at close range."

The helo pilot was certain that he had flown over him several times before sighting his smoke flare.

An Air Force helo made the actual pickup. Except for the survivor's difficulty positioning the rescue sling in the small of his back, the rescue was uneventful.

The A-4 NATOPS states that in case of engine flameout below 10,000 feet, the pilot should zoom to convert excess airspeed to altitude. If the peak altitude is below 5000 feet and no airstart is achieved during the zoom, the pilot should eject at peak altitude.

"If the pilot had followed this recommended procedure," the flight surgeon states, "he would have had time to inflate his life preserver and make sure it was fully inflated. He would also have had time to deploy his liferaft before water entry."

"Vigorous squadron survival training should be emphasized regularly and injected with maximum realism for aircrewmembers," the investigating board said in closing out its report. "Immediate and well-planned reactions are required in a close survival situation."

When an emergency occurs, you won't have time to think out what you're going to do. Plan ahead so that your emergency reactions – including timely ejection or bailout – are correct and instantaneous.

Survival know-how is like money in the bank. ◄

Night Carrier Landing Mishaps

FROM July 1969 to present, there have been 81 (all-Navy) night carrier landing accidents. Forty-three of these accidents involved pilots who had not had a night carrier landing within the previous 7 days, nor did they have a day landing on the day of the mishap.

Since 90 percent of all night carrier landings are performed by pilots who have executed a night landing within the previous 7 days, the mishap statistics are highly significant, i.e., over 50 percent of the night carrier landing accidents occur to a small population – 10 percent of pilots who are not night current.

These statistics support the LSO NATOPS requirements for a day cat shot and landing prior to a night go if the pilot has not had a night trap within 7 days. Additionally, they highlight the importance of proper flight scheduling and continuous evaluation of pilot performance to ensure each pilot is ready to meet the challenge of a night carrier landing.

COMNAVAIRLANT *Weekly Safety Bulletin*

My First Flight Instructor

By CDR H. L. Fremd

I'LL never forget my first flight instructor. He's the guy who guided me on my very first trip away from the solidity, comfort, *and safety* of Mother Earth. I still remember how, after we had cleared the field, he leveled off at a few thousand feet, trimmed the controls for level flight, took both hands off the controls to show me how well the aircraft was trimmed, and said, "Now you take the controls and fly it."

So I took the controls, and then the fun began: a zoom and then a dive, up and down, like a roller coaster. It was thrilling. It was exciting. The only thing that worried me was that it was getting worse, and the aircraft was starting to roll off on one wing.

About this time, my instructor told me to release all controls. At the same time, he pointed out that he still had his hands and feet off the controls. The aircraft settled down rapidly of its own accord, the up and down oscillations quickly dampened out, and the aircraft was in a gentle right turn, descending ever so slowly. He told me to keep my hands off the stick and to put in a little left rudder to pick up the right wing.

When the wings were level, he told me to get off the rudder. I did. Then he gave me my first verbal inflight instruction. He said, "The aircraft isn't hard to fly. Right now it's flying pretty well by itself. Of course, sooner or later, it's going to get out of the desired flight condition and you'll have to control it if you want to stay straight and level, unless you want to climb, descend, turn, etc.

"The point is to show you that although the pilot has to fly the aircraft, he has to do it with finesse." Then he added, "Let's try it again. Only this time we're going to be smoother. This time I want you to put your right elbow on your right knee, then hold the stick very lightly, using only your thumb on one side and your middle and index fingers on the other. When you want to move the stick, do it by wrist action. This will enable you to smoothly manipulate the controls. Later on, you'll develop the coordination and finesse to move the controls in the way and in the amounts you want, even though you may be gripping the controls quite firmly.

"All this shows that you don't have to be rough with the aircraft. Most of the time, you only need to guide it with fine adjustments."

Well, it was some time before this lesson took full effect – about the middle of advance training I think. But he had a good point, and I soon understood what he was talking about even though I had not yet mastered the aircraft.

This is one of my good memories. I have some of the other kind, too. I remember later on takeoff and climbout from Homefield he rode me mercilessly about airspeed control. He kept saying in that calm but ever so firm voice, "Airspeed! Airspeed!" and continued to do

so until I hated the word. I felt sorry for myself. I thought, "I'm just learning to fly, and I'm only 5 knots off airspeed. I think it's unreasonable for him to ride me like this about 5 knots when I'm just learning. I'll bet he can't keep his car within 5 miles of a set speed – and he's been driving for years."

Well, this went on for a couple of days until I decided that the only way to get him off my back was to climb out at 100 knots, not at 95 to 105 knots. So I did. But then it wasn't long before he was on my back again about something else.

After about 10 flights, I began to feel pretty good – maybe too good! But my instructor still rode me about things from time to time. It may have been nothing more than insisting that a certain procedure be performed *exactly* right at *exactly* the right time – but he still managed to find one or two things on every flight which he would uncompromisingly insist I perform exactly right. Mostly, he would gently correct me on one point or another as we went through the routines of stalls, acrobatics, and landings. So, as I said, after about 10 flights, I was feeling pretty good. Maybe I was feeling even a little like I was a hot pilot. I know I never overlooked any opportunity to tell my fellow students how well my instructor apparently regarded my progress.

Then came the rude awakening. Suddenly my primary flight instructor turned into a . . . well, I guess the word "devil" will have to suffice.

On climbout, he growled at me for being off airspeed – by 3 knots, mind you. Then, before I could adjust my nose position, he sarcastically inquired if I intended to wait until we were over the paper mill before turning to our climbout heading. And that's the way the whole flight went. My stalls were atrocious, so he said. And when it came time for landing practice, everything really went to hell. On initial for the standard field entry, he bitched about my turn-in point. He always seemed to demand something *just* before I did it. On descent to pattern altitude, he wanted the power back, the gear and flaps down, etc. – *just* before I got around to doing it. On climbout after a touch-and-go, he roughly yanked the power back, slapped the nose down to a level position, and bluntly noted that a little more and we would have "busted" the altitude reserved for initial entry.

Finally, I could no longer contain my resentment. And in a burst of anger, I told him what I thought of his unreasonable attitude, emphasizing that I was just learning to fly. His response surprised me. He took the controls and told me to relax; we left the pattern. He then took me on a guided tour of the local flying area, pointing out a place here, a place there, asking a casual question now and then. Whenever I indicated a lack of recognition about our position or about landmarks, he took pains to orient me. Before we returned to Homefield, I was feeling pretty good again. My instructor once again seemed like the old philosopher and friend.

As we approached the entry channel, he told me to take the aircraft again and said that he wanted me to show him a good entry – and flight – all the way to the chocks. I didn't disappoint him.

Afterwards, as we debriefed over a cup of coffee, he mentioned that I'd soon be up for my safe for solo check. He mentioned the next flight and told me that before he'd put me up for a checkride, I'd have to show him (on my next flight) that I was ready.

I gave his statement (and his actions on the

just-completed flight) a lot of thought. And I gave my procedures a lot of study the rest of the day and that night because I understood what he was talking about. If I wanted to be put up for a safe for solo check, I had to be ready – friendship notwithstanding. So I *was* ready, and I *was* put up for my check.

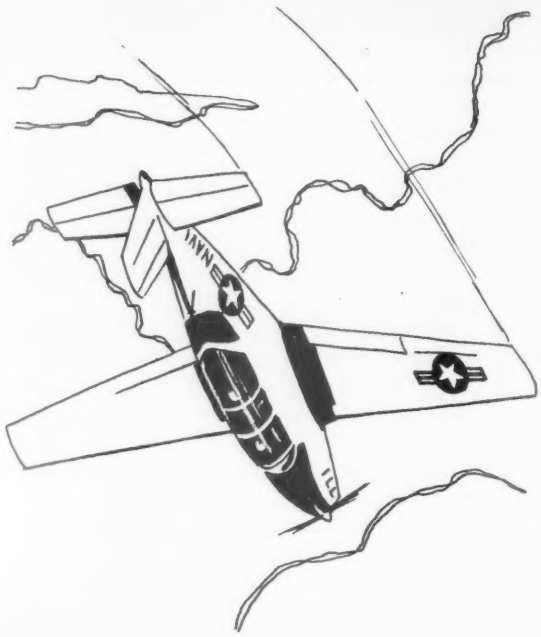
Now, some years later, I still remember my primary flight instructor with respect. And, though I had many other instructors during training and since, I think it was my primary instructor more than any other who gave me an outlook on flying which I still have.

He showed me many things. He let me know that even though he was on his third or fourth flight of the day, he still had the time and the energy to demand the

best from me. He had the time to constructively criticize, and he had the motivation to demonstrate one more loop for my benefit even though it may have been his 20th loop of the day – just so I would learn not to drop a wing, even by 10 degrees! He wanted me to be good, precise, professional.

He wasn't a big man. Nor was his bearing overly impressive. But, in retrospect, *he* was impressive. His handling of the matter of safety is a good example. He never regarded it as separate and apart from the business of flying skills and procedures. He seldom ever threatened me with death and destruction from above for not complying with safety rules. No, he was more of a demonstrator. He showed the way. For instance, the time the tower cleared us for "immediate takeoff," to "expedite." He calmly called the tower and asked to clear the duty since we weren't really ready to "expedite." He told me, "Never let anyone or anything rush you into an ill-prepared flight."

And he demonstrated that course rules were something to live by as far as he was concerned. If we were supposed to pass a point at half a wingtip distance in the entry to Homefield, he didn't mind telling me that



Comment

THE NAVAL flight instructor's role encompasses more than merely teaching a student to apply academic principles with motor skills to manipulate flight controls. There's another equally important factor which has a definite bearing on naval aviation safety. We speak of a student's attitude toward flying. If we recognize that this attitude is important, we must also recognize that the naval flight instructor is a very important factor in the molding of attitudes among naval aviators.

He is often the very first naval officer with whom a student becomes closely associated after entering the Navy. Excepting a relatively small input of officers from the Fleet, almost every student naval aviator is delivered to the care of his primary flight instructor after only a few short months in the Navy, a large part of which has been spent undergoing academic instruction. Knowing that his instructor has been assigned to the training command after a tour of sea duty or other operational duty, it's only logical that this young student is going to form an opinion or attitude about Navy life and naval aviation safety based in large part on the example of his flight instructor.

It has been said that safety is a state of mind. To develop this state of mind is to achieve true professionalism in naval aviation. To encompass each of the daily flight functions with the thought of safety and to instill the habit of safety in each student's life should be the goals of the flight instructor. The flight instructor must *show* the way to safety, not by word alone, but by deed, knowing and showing the safe way to live, work, and fly. Teaching the student to use the tools of safety such as NATOPS, proper preparation, and good personal habits are the marks of truly professional naval aviators.

Thus, the naval flight instructor is – and always has been – the keystone of the structure called *naval aviation.* From the days of bailing wire and bamboo struts to the era of Mach 3 – and beyond into space – the men who taught and now teach other men in the Navy and Marine Corps the how, the why, and the wherefore of coping with Newton's Law should be held in high esteem.

As far as career enhancement is concerned, the most casual review of the duty assignments of our past and present Navy and Marine Corps leaders will reveal that a very large percentage at one time or another "pulled instructor duty." That fact should speak for itself. So, here's to the instructor – long may he flourish!

just over or just under half a wingtip wouldn't do.

Now, years later, I'm an experienced pilot in the Fleet. I often wonder what happened to my primary flight instructor. Was he recognized, promoted, and otherwise rewarded for the professional naval aviator he was?

Every day I see and fly with nuggets. Most of them are professional, if relatively inexperienced, aviators. Every now and then, though, I see one doing something that falls a little bit short of being professional. Maybe it is a very high speed break, a wrapped up approach, an S-turn in the groove, a landing 10 knots above the optimum – but whatever it is, I often wonder what kind of guy he had for a primary flight instructor. Indeed, I wonder what kind of instructors he had, on the average, throughout the flight training program.

Sometimes, too, I wonder what the Navy thinks of flight instructors as career naval officers. I'm thinking about this now, especially, because I'll soon be up for orders. And I'm wondering whether to make a pitch for an extended tour of Fleet duty, whether to try to get some good staff duty, or whether to put my Fleet training and experience – and my love of flying – to work motivating student naval aviators to take the professional approach, not only to flying but to a career as a naval officer.

I'm wondering about this partly because I like to think I am a professional both from a flying point of view and from a career-as-a-naval-officer point of view. And, frankly, I'm wondering about whether a request for instructor duty, however personally satisfying it may be to train and motivate young officers and students, will be in my best career interests.

I don't have the complete answer right now. But one day soon I'm going to have to make my decision on what duty to push for next. I can only hope by that time the answers to my musings will be apparent. ◄

FOUR IS USUALLY ENOUGH

WHEN the flight engineer eases into his seat, after having left it to take a look at No. 3, and recommends to the pilot that it be feathered, you can bet the pucker factor increases a skosh. If No. 4 then starts acting up, it would take a hardy pilot not to become concerned, unless of course he happens to be a refugee from B-36s and B-52s. Someone like that might casually ask, "Which side?"

LT Robert C. McAfee, USNR, was the TPC of a trusty (old and tired) C-54Q one December evening when a combination of events kind of backed up on him. He and his crew were homebased at NAS New Orleans, and that's where the action was.

The crew was returning after a flight up "nawth," and the closer they got to bayou country the more miserable the weather became. It wasn't the violent, throw-up kind. It was the supersaturated, moisture-in-the-air kind.

Traffic in the area was light. Light? The C-54 was the only aircraft airborne for a radius of 150 miles – not counting the transients passing by overhead.

Although the weather reports were not encouraging, LT McAfee decided as long as they were so close, why not shoot an approach. Their luck might be good enough to get them aboard. GCA took them down to minimums, but when no runway environment appeared through the fog, the pilot executed a missed approach.

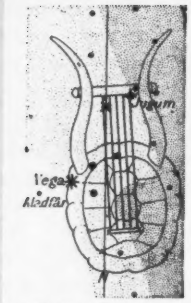
While climbing out, the copilot and flight engineer saw sparks and fire coming from outboard of No. 3. They suspected, naturally enough, that the engine had blown an exhaust stack. The engine was feathered, and the crew began to think in earnest about getting their four-engine bird onto some piece of concrete while three were still turning.

There followed a conversation with Houston Center as to a suitable alternate since theirs had socked in along with all other Gulf Coast airfields. Each "how 'bout" from the crew for various airfields was negated by Houston. This was one of those situations, not uncommon along the Gulf Coast, when everything was below minimums.

Weather inland, however, was much better, so the crew headed the C-54 toward Jackson, Miss. The aircraft was through 2000 feet, climbing, when the flight engineer noticed flames coming from No. 4. (It was later determined that No. 4 was sick with mag trouble and was pumping out flaming raw fuel.) Power on No. 4 was reduced, and meto power set on No. 1 & 2. An emergency was declared.

It was now time to land before something serious happened. Center advised that Hattiesburg was VFR, and the C-54 was vectored to the VOR. No. 3 was started for the approach and landing. On deck, it was feathered again.

The pilot taxied in and the aircraft was secured. The mech sleuths went to work. Nothing was found wrong with No. 3, but after pinpointing the trubs in No. 4, they also found No. 2's generator loose on its mount, with a sheared shaft. ◄



The Constellation Lyra.

Letters

Tail Rotor Failure

Bloomfield, Conn. – Two very good articles regarding helicopter tail rotor failures have appeared recently in APPROACH. In the interest of flying safety, however, a point concerning the H-2 *Seasprite* should be clarified.

The April '72 APPROACH article by LCDR Doyle states that the H-2 can continue level flight following loss of tail rotor drive – I wish it were so. Testing here at the factory has shown that if a drive failure occurs causing a loss of tail rotor thrust, an immediate entry into autorotation must be accomplished to maintain control of the helicopter. A minimum amount of power can safely be used to stretch a glide once the helicopter has been brought under control by entry into autorotation. If an attempt to maintain level flight is made, however, here is what happens:

As the helicopter yaws, airspeed will decay due to increased fuselage drag. More power than normal is then required to maintain level flight because of the increased drag and, therefore, more torque generated. If airspeed is allowed to continue to slow before reducing power, the yaw angle will continue to increase, and a spin will ultimately develop as cyclic control limits are reached.

In the NATOPS manual, we have distinguished between loss of tail rotor *thrust* and loss of tail rotor *control* under separate headings with appropriate procedures. However, to avoid confusion, perhaps the title *Loss of Tail Rotor Thrust* should be further amplified to include loss of tail rotor drive or those components that can result in loss of thrust.

Fortunately, we have had very few known failures of this type, but until we pilots grow feathers, we've got to be prepared.

Al Ashley
Senior Test Pilot
Kaman Aerospace Corporation

• In LCDR Doyle's article, talking about ultimate tail rotor drive failure, the author said, "If he is flying an H-34, H-2, or certain series H-1, he has an option of attempting to fly the helicopter to a position over smooth terrain or possibly to the nearest airport by applying left cyclic and sufficient power to maintain altitude."

The author acknowledges he didn't mean level flight. In his mind, he was using altitude as a tradeoff for distance over the ground. That is, when autorotation has been started in the H-2, he was advocating controlled descent toward an area where the surface might be more favorable for landing.

APPROACH welcomes letters from its readers. All letters should be signed though names will be withheld on request.

Address: APPROACH Editor, Naval Safety Center, NAS Norfolk, Va. 23511. Views expressed are those of the writers and do not imply endorsement by the Naval Safety Center.

Unfastened Koch Fittings

FPO, New York, N.Y. – Reference the items in the 9-15 Aug 70 WEEKLY SUMMARY and March 73 APPROACH (page 27) commenting about pilots ejecting without connecting the upper torso harness Koch fittings. On two distinct occasions in the past several years, as the pilot of A-4 aircraft, I taxied out for takeoff only to discover that during the strap-in procedure, I had neglected to connect the upper fittings. The reason in both instances was an interruption by the plane captain (habit pattern disruption) and a lack of pilot attention and awareness.

Fortunately, I had the excellent habit of using the checklist, and one item, HARNESS, was always checked by placing my left hand on the harness lock lever to ensure it was in the locked position and leaning forward against the straps.

I hope this may help prevent future such occurrences.

CDR A. M. Rankin, USNR
VAW-207

• Sharing your experiences may indeed save someone from grief. Such "almosts" are excellent testimonials to using the checklist – every time.

Look Around

Port Orchard, Wash. – As part of the black-shoe Navy, I want to let you know that I thoroughly enjoy your magazine. I'm a private pilot, a ground instructor, and fledgling commercial and instrument student.

I buzz around in a Cessna at all of 130 knots for no reason other than fun. As an old fud of 42, I can only look longingly and with a lot of respect at you pros. I would remind us all, however, of safety rule No. 1, which we have heard daily since we first began, but which we all tend to forget: *Look around!* It's crowded up there. A collision situation is the only time my 172 is an even match for your F-4 . . . and then we both lose!

Good luck to you brown-shoe types. Fly safely!

LCDR Lamar Smith, MSC, USN

• Thank you for your words of praise and wisdom. Sounds as though you have a swiveled head on your shoulders. We all should.

Passenger Briefing Goof

NAS Alameda – As a VR ASO, I'm always on the lookout for good, pertinent articles from which to glean source material for our monthly,

all-hands safety meeting. Your article entitled "Passenger Briefings" in the Dec '72 issue of APPROACH was right up our alley and contained some good suggestions and reminders for our type operations.

Something in the C-118 schematic, however, looked unusual. On closer inspection, there appear to be several conflicts with NATOPS which should be resolved. In the crew assignment of liferafts, the schematic differs from NATOPS in all but the green raft. The second conflict is in the area from which the green raft is launched. NATOPS indicates it is to be launched from the main passenger entrance vice the after, starboard side. The number of passengers assigned to each raft is also different from NATOPS.

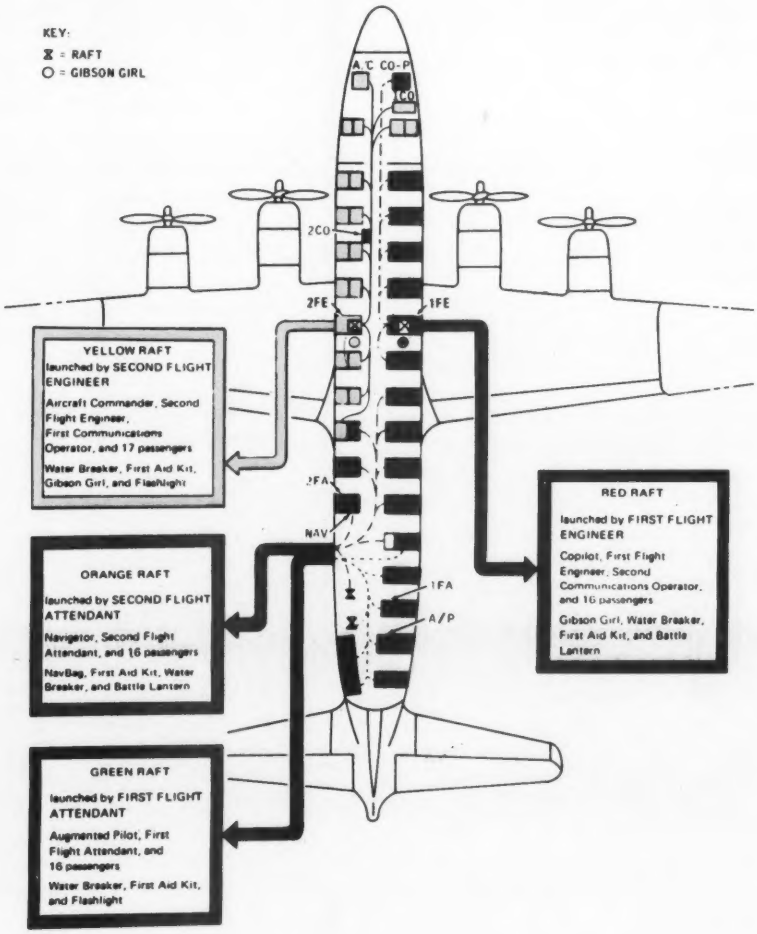
. . . At any rate, standardization throughout the Fleet is a goal I think we should all be striving for.

LT J. W. Stella
ASO VR-51

NAS Glenview – Reference your article on passenger briefing. The diagram for the C-118 illustration does not conform to that currently in the C-118 NATOPS manual on pages 5-28 and 5-29. In some cases, the crewmember assignments and seat locations (color code) do not conform to NATOPS. Also, the green area shows passengers departing the aircraft from the last starboard exit window when NATOPS specifies using the passenger entrance door. All users should conform to NATOPS until an approved change has been made.

ADRC T. J. Dooley
C-118 Simulator School

● You both are absolutely correct. We goofed by publishing a somewhat dated schematic. The correct NATOPS schematic for C-118 passenger ditching routes and exits is shown below.


KEY:
⧗ = RAFT
○ = GIBSON GIRL
A/C CO-P
2CO
2FE
1FE
YELLOW RAFT
launched by SECOND FLIGHT ENGINEER
Aircraft Commander, Second Flight Engineer, First Communications Operator, and 17 passengers
Water Breaker, First Aid Kit, Gibson Girl, and Flashlight
2FA
NAV
1FA
A/P
RED RAFT
launched by FIRST FLIGHT ENGINEER
Copilot, First Flight Engineer, Second Communications Operator, and 16 passengers
Gibson Girl, Water Breaker, First Aid Kit, and Battle Lantern
ORANGE RAFT
launched by SECOND FLIGHT ATTENDANT
Navigator, Second Flight Attendant, and 16 passengers
NavBag, First Aid Kit, Water Breaker, and Battle Lantern
GREEN RAFT
launched by FIRST FLIGHT ATTENDANT
Augmented Pilot, First Flight Attendant, and 16 passengers
Water Breaker, First Aid Kit, and Flashlight

Flight Deck Hazards

NAS Norfolk, Va. – Great horned toadies! Don't let Gramps see your picture of a trapping *Phantom* on page 7 of the March issue. He might suffer a terminal case of acid indigestion. It looks like the fifty yard line of a close football game – all the players from the bench are standing along the foul line kibitzing. One "player" has entered the field of play, but stands to lose a lot more than a few yards if he's caught. I bet the supervisors are right out there with them. And, if the cable breaks or a droptank breaks loose, there'll be a lot of Monday morning quarterbacking by the survivors – at the long, green table.

As an illustration for your article on accident statistics, it is excellent. Quoting the article, "People cause accidents through their inability to take the *opportunity* to perform in such a fashion as to preclude an accident." But . . . it is not *inability;* rather, it is generally a *refusal* to heed the clear lessons of the past. Those careless gents know the hazards, but they kid themselves into believing that expediency, combat requirements, or a thousand other excuses give them license to ignore the statistics and the tenets of the CVA/CVS NATOPS.

So, regretfully, I expect that when the next crossdeck pendant parts, or the next droptank takes an unescorted trip along the foul line, there will be several hardworking but misguided and complacent flight deck personnel maimed – or worse . . . not because of statistics, *but in spite of them.* I hope I'm wrong.

LT James A. Metcalf
NARU

● Surprisingly, considering the number of people bordering all the operating foul lines during countless arrested landings, we lose very few. 'Course, this statistical fact is little comfort to those few.

Vol. 19 **approach** No. 1

RADM W. S. Nelson
Commander, Naval Safety Center
Publisher

Our product is safety, our process is education and our profit is measured in the preservation of lives and equipment and increased mission readiness.

Contents

1 Pilot Distracted: Flew Into Water
3 Propwash and Jet Blast
6 Hazards of the GCA and the Standard VFR Traffic Pattern
By CAPT L. "V." Culp, USMC
10 In Defense of the Pilot
By LT T. C. Browne
13 Bravo Zulu
14 Dehydrated Tiger
16 Transition to Peace Safely
By LTJG David L. Sturgeon
18 Pro-Am
By A. W. Stoeckel
22 USAAAVS Develops Crashworthy Seat
24 Money in the Bank
26 My First Flight Instructor
By CDR H. L. Fremd
29 Four is Usually Enough
IBC Every Man a Safety Officer
By LCDR D. J. L'Herault

32

Departments

4 Air Breaks
8 Anymouse
21 Notes From Your Flight Surgeon
30 Letters

NavAir00-75-510

Purposes and policies: APPROACH, published monthly by the Naval Safety Center, presents the most accurate information currently available on the subject of aviation accident prevention. Contents should not be considered as regulations, orders, or directives and may not be construed as incriminating under Art. 31, UCMJ.

Photos: Official Navy or as credited. Non-naval activities are requested to contact NAVSAFECEN prior to reprinting APPROACH material.

Correspondence: Contributions are welcome. The right to make editorial changes to improve the material without altering the intended meaning is reserved. Reference to commercial products does not imply Navy endorsement. Views of guest-written articles are not necessarily those of NAVSAFECEN.

Distribution: Requests for distribution changes should be directed to NAVSAFECEN, NAS, Norfolk, Va. 23511. Phone: Area Code 703, 444-1321, Att: Safety Publications Dept., IF YOU ARE A PAID SUBSCRIBER, address all renewals and address changes to Division of Public Documents, Washington, D. C. 20402.

Subscriptions: Single copy $1.00; 1-year subscriptions $10.50; $2.75 additional annually for foreign mailing.

Printing: Issuance of this periodical approved in accordance with Department of the Navy Publications and Printing Regulations, NAVEXOS P-35. Library of Congress Catalog No. 57 60020.

CAPT Richard A. Eldridge, Director of Aviation Safety Programs
CDR J. O. Yanaros, Executive Publisher

CDR Floyd E. Sykes, Chief Editor
LCDR Rodney N. Whalen, Editor
Robert Trotter, Art Director
J. A. Bristow, Life Sciences Editor
W. E. Cumbie, Military Editor
C. B. Weisiger, Helicopter Editor
R. A. Eldridge, Special Ops Editor
R. T. Forbush, Technical Editor
R. L. Marcoux, Maintenance Editor
Blake Rader, Illustrator
William Langston, Illustrator
PHCS T. J. Collins, Photographer
K. E. Warmack, Editorial Assistant

Credits

This month's cover by Boeing-Vertol artist Charles Ellis shows the H-46 *Sea Knight* in a tradition-oriented vignette. Courtesy Boeing-Vertol.

SAFETY OFFICER

Although the goals of all ASOs and safety programs are common, the means and philosophies must necessarily differ to some degree, depending upon the size and mission of the aviation unit. My particular concern is for the relatively small, deployed, carrier-based combat squadron in which operational necessity often creates a misty atmosphere for a solidly implemented safety program.

Every Man a Safety Officer

By LCDR D. J. L'Heureux, ASO, VA-25

WHO is the squadron aviation safety officer? *I am the safety officer*, purports the sign over my office door, as recommended in safety school. But who is effectively the ASO in your unit? The most safety conscious and effective squadron is one in which you take the total number of personnel assigned and make them all aviation safety officers.

Unfortunately, the ASO, especially in smaller units, has no one working directly for him. He is burdened with injury reports, incident reports, crunch logs, etc., while still having to monitor his program. These reports, of course, are a pulse to determine the effectiveness of his safety program. But he is still the one who must make everything work. The obvious answer to his burden is to have some people assigned directly to him. Herein lies the unique quality of an effective ASO. *He gets everyone to work for him without the technicality of a billet assignment sheet.*

Forcefulness, knowledge, experience, tact, and credibility are among the many required attributes of an effective ASO. The ASO does not have the good fortune of inheriting Op Orders, TIMIs, etc., to optimize his program. He *does* have SOP, NATOPS, and instructions, however.

Safety is a *frame of mind*, optimized when it is possessed by all hands. As personnel rotate in and out, this frame of mind must be developed and strengthened.

ASOs, get on with it! *Take the variable out of the safety equation by making everyone a safety conscious safety officer.*

APPROACH concurs 100 percent in the premise that safety is every man's business, *but takes "judicial notice" of the sad fact that not every ASO, acting on his lonely own, can make that happy situation come to pass. For that reason, APPROACH offers enthusiastic support to the ongoing evaluation of a Squadron Safety Department encompassing Safety, NATOPS and QA – a powerful organization with persuasive teeth. – Ed.*